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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/882,351	06/15/2001	Won-Il Jung	45323/DBP/Y35	8658
23363	7590	04/21/2004	EXAMINER	
CHRISTIE, PARKER & HALE, LLP 350 WEST COLORADO BOULEVARD SUITE 500 PASADENA, CA 91105			TSOY, ELENA	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	09/882,351		JUNG, WON-IL	
	<b>Examiner</b>		<b>Art Unit</b>	
	Elena Tsoy		1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 April 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4,7-14 and 17-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,7-14 and 17-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \*   c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 5, 2004 has been entered.

***Response to Amendment***

2. Amendment filed on April 2, 2004 has been entered. Claims 3, 5, 15 have been cancelled. Claims 1, 2, 4, 7-14, 17-23 are pending in the application.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1, 2, 4, 7-14, 17-23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rourke et al (US 4,720,910) in view of Shackle (US 6,174,623).

As to claims 2, 7, 8, 10-13, 17-23, Rourke et al disclose a method of preparing a plurality of encapsulated particles for the as active cathode electrode (positive active) material (See column 1, lines 7, 40-41) for a lithium secondary battery (See column 2, line 20), wherein particles of an insertion compound such as lithium complex metal oxide or V<sub>2</sub>O<sub>5</sub> (See column 2, lines 12-14) are encapsulated in an electronically and ionically conducting polymeric material (See column 1, lines 66-68; column 2, lines 1-5), comprising dispersing the insertion particles in

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a solution of the polymer such as polyethylene oxide or other than polyethylene oxide polymers (See column 3, lines 43-46) in a solvent such as chlorinated hydrocarbon (See column 2, lines 52-55) in the presence of a conductive filler and salt (See column 2, lines 46-57), and evaporating the solvent using a spray dryer (See column 4, lines 4-6) forming a particle in which the lithium complex metal oxide is encapsulated within a polymeric shell containing the inorganic salt and conductive filler (See column 1, lines 43-54; column 3, lines 40-55). An inorganic salt renders the conductive polymer ionically conductive (See column 2, lines 33-36) and conductive filler such as carbon black renders the conductive polymer electronically conductive (See column 2, lines 37-38) so that the polymeric shell is electronically and ionically conductive (See column 2, lines 1-5). The amount of coated conductive polymer ranges from 6-11 to 52-90 wt % based on the weight of the lithium metal oxide (See column 3, lines 14-31). The Examiner's Note: a coating layer of the coated lithium complex metal oxide particle having diameter of 2 microns would clearly have thickness less than 1 micron since the particle is constructed from 70 wt % of the core and 18 wt % of the coating layer (See column 6, lines 36-45).

Rourke et al fail to teach that: a conductive filler is a conductive polymer, which is dissolved in the solvent together with polyethylene oxide, and selected from the group consisting of polypyrrole, polyaniline, polythiophene and polyacetylene (Claim 1); the conductive polymer being in emeraldine base or a polymer in doping state (Claim 4); the lithium complex metal oxide is lithium-containing manganese-based metal oxide (Claim 14) such as  $\text{LiMn}_2\text{O}_4$  (Claim 9).

As to claims 1, 4, Shackle teaches that co-pending 08/163,209 (now US 5,418,089), the disclosure of which is incorporated in its entirety, disclosed the replacement of carbon as the conductive component of the cathode with a conducting polymer such as polypyrrole, polyacetylene, polyaniline, preferably polyaniline and a dopant (See column 2, lines 47-57) in an electrochemical cell to improve the electronic conductivity of the cathode (See column 2, lines 1-8). Shackle further teaches that the conducting polymer can be used as a solution in ordinary solvents such as chloromethane (chlorinated hydrocarbon) (See column 2, lines 64-67) for coating cathode-active particles (See column 2, lines 47-57).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have replaced carbon black in Rourke et al with a conducting polymer such as polypyrrole, polyacetylene, polyaniline, preferably polyaniline and a dopant, by dissolving the conducting polymer together with polyethylene oxide in chlorinated hydrocarbon, with the expectation of providing the desired improved electronic conductivity of the cathode, as taught by Shackle.

As to claims 9, 14, Shackle teaches that  $V_2O_5$  is functionally equivalent to lithium-containing manganese-based metal oxide such as  $LiMn_2O_4$  for the use as a cathode-active material (See column 6, lines 25-29).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used  $LiMn_2O_4$  instead of  $V_2O_5$  in Rourke et al since Shackle teaches that  $V_2O_5$  is functionally equivalent to lithium-containing manganese-based metal oxide such as  $LiMn_2O_4$  for the use as a cathode-active material, and the selection of any of these known cathode-active materials in Rourke et al would be within the level of ordinary skill in the art.

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*Response to Arguments*

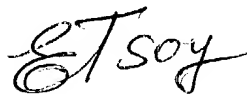
5. Applicant's arguments with respect to claims 1, 2, 4, 7-14, 17-23 have been considered but are moot in view of the new ground(s) of rejection.

*Conclusion*

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is (571) 272-1429. The examiner can normally be reached on Mo-Thur. 9:00-7:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Elena Tsoy  
Examiner  
Art Unit 1762

April 15, 2004